

REMARKS***Summary of the Response***

By the present response, claims 12 and 22 have been amended and new claims 35 and 36 have been presented for the Examiner's consideration. Applicant submits that no new matter is added by the present amendment. Support for the amendment may be found, for example, at least in Figures 1A – 2D. Accordingly, upon entry of the amendment, claims 12 – 36 will be pending. Reconsideration of the rejected claims in view of the above amendment and following remarks is respectfully requested.

Summary of the Office Action

In the instant Office Action, the Examiner has rejected claims 33 and 34 under 35 U.S.C. § 112, 2nd paragraph, and claims 12 – 34 over the art of record. By the present amendment and remarks, Applicant submits that the rejections have been overcome, and respectfully requests reconsideration of the outstanding Office Action and allowance of the present application.

Improper Final Rejection

Applicant respectfully submits that the Examiner did not address each of the features of claims 14, 19, 25, 28, 33 and 34 and did not address any of the features of claim 30, as noted below. Additionally, Applicant submits the Examiner maintained a rejection of claim 28 without addressing each of Applicant's proffered arguments. Thus, Applicant respectfully submits that the Examiner has not set forth a complete action or a clear record.

Accordingly, Applicant respectfully requests that the Examiner properly address the untreated features of the claimed invention and Applicant's arguments, such that a clear issue is

developed between the Examiner and Applicant. Moreover, Applicant respectfully submits that the finality of the instant action should be withdrawn and the next action, which should clarify the record, should not be a final action.

Amendment Proper for Entry

Applicant submits that the entry of the above amendment is proper. Applicant submits that the entry of the amendment is proper, since such amendment places the application in condition for allowance or, alternatively, places the application in better form for appeal.

Traversal of Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Applicant traverses the rejection of claims 33 and 34 under 35 U.S.C. § 112, 2nd paragraph as being indefinite. Specifically, the Examiner asserts that the phrase "in combination with a combustion chamber" is unclear, in that it is not clear to the Examiner whether Applicant is claiming a combustion chamber including the injector. As such, the Examiner asserts that claims 33 and 34 only claim an injector. Applicant respectfully disagrees.

According to MPEP 2173.02, the test for definiteness under 35 U.S.C. 112, second paragraph, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). Moreover, definiteness of claim language must be analyzed, not in a vacuum, but in light of: (A) the content of the particular application disclosure; (B) the teachings of the prior art; and (C) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

Claims 33 and 34 each recite, in pertinent part:

The injection element . . . in combination with a combustion chamber, wherein the third outlet openings are structured and arranged for forming the cooling liquid film layer on a wall of the combustion chamber.

Applicant submits that when viewed in light of: (A) the content of the instant application disclosure; (B) the teachings of the prior art; and (C) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made, claims 33 and 34 are not indefinite. That is, Applicant submits that it is clear that these claims recite an injection element in combination with a combustion chamber, which is a proper claim format.

Accordingly, Applicant respectfully requests the rejection of claims 33 and 34 be withdrawn and the Examiner indicate that claims 33 and 34 are in compliance with 35 U.S.C. § 112, 2nd paragraph.

Traversal of Rejection Under 35 U.S.C. § 102(b)

In addressing previously presented claims 12 and 22, the Examiner asserted GRADON, STURGESS and/or HOKE disclosed each of the features of these previously presented claims. While Applicant does not agree with the Examiner that the applied art under 35 U.S.C. §102(b) anticipates the embodiments of the invention recited in at least claims 12 and 22, in an effort to advance prosecution, claims 12 and 22 have been amended to even more clearly define the features of the present invention. Further, Applicant expressly reserves the right to refile the subject of independent claim 12 and 22 as presented prior to this amendment in one or more continuing applications.

To anticipate a claim, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. Applicant submits that none of the applied documents discloses each of the features recited in at least the independent claims.

1. Over GRADON

Applicant traverses the rejection of claims 12 – 16, 19, 21, 22, 25, 27, 33 and 34 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,498,059 to Gradon et al. [hereinafter GRADON]. The rejection is respectfully traversed.

Independent Claims 12 and 22

Embodiments of the present invention are directed to an injection element. Claim 12 recites, in pertinent part:

- a front face surface;
- an inner element with a first outlet opening;
- an outer element, comprising:
 - at least one second outlet opening structured and arranged for receiving and injecting fuel in a combustion space, and arranged coaxially to the first outlet opening; and
 - third outlet openings radially beyond the at least one second outlet opening composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening,
 - wherein at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface.

Claim 22 recites, in pertinent part:

- a front face surface;
- an inner element comprising a first outlet opening;

an outer element with at least one second outlet opening structured and arranged for receiving and injecting fuel in a combustion space, and arranged coaxially to the first outlet opening;

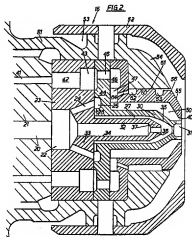
the inner element further comprising third outlet openings composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening to surround the first outlet opening,

wherein at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface.

Applicant respectfully submits GRADON does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claims 12 and 22.

GRADON discloses a burner, for example, for a gas turbine engine combustion chamber. In addressing claim 12, the Examiner designates sleeve (32) having hole (36) as the recited inner element with a first outlet opening. Additionally, the Examiner designates cylindrical member (56) having opening (40) as the recited outer element and second outlet opening. Furthermore, the Examiner designates bores 64 as the third outlet openings.

Applicant has reproduced Figure 2 of GRADON below, which illustrates the burner 15, which includes the above-noted elements of GRADON.



As shown in the above Figure, the Examiner-designated first outlet opening (i.e., hole 36), the Examiner-designated at least one second outlet opening (i.e., main jet orifice 40) and the Examiner-designated third outlet openings (i.e., ends of drillings 64) are each located on different surfaces. That is, the Examiner-designated first outlet opening (i.e., hole 36) is located on a right-most surface of the end wall 37. The Examiner-designated second outlet opening (i.e., main jet orifice 40) is located on a right-most surface of the frusto-conical element 55. Additionally, the Examiner-designated third outlet openings (i.e., ends of drillings 64) are located internally within the GRADON device. As such, all three of the Examiner-designated outlet openings are located on different surfaces. Moreover, Applicant submits that at most, only one of these different surfaces of GRADON in which the Examiner-designated outlet openings are arranged can reasonably be designated as a front face surface.

In addressing claim 22, the Examiner designates annular bores 24 as the third outlet openings. As shown in the above Figure, the Examiner-designated first outlet opening (i.e., hole 36), the Examiner-designated at least one second outlet opening (i.e., main jet orifice 40) and the Examiner-designated third outlet openings (i.e., ends of annular bores 24) are each located on different surfaces. That is, the Examiner-designated first outlet opening (i.e., hole 36) is located on a right-most surface of the end wall 37. The Examiner-designated second outlet opening (i.e., main jet orifice 40) is located on a right-most surface of the frusto-conical element 55. Additionally, the Examiner-designated third outlet openings (i.e., ends of annular bores 24) are located internally within the GRADON device. As such, all three of the Examiner-designated outlet openings are located on different surfaces. Moreover, Applicant submits that at most, only one of these different surfaces of GRADON in which the Examiner-designated outlet openings are arranged can reasonably be designated as a front face surface.

Therefore, Applicant respectfully submits GRADON does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claims 12 and 22.

Dependent Claims 13 – 16, 19, 21, 25, 27, 33 and 34

Applicant respectfully submits that claims 13 – 16, 19, 21, 25, 27, 33 and 34 depend from respective allowable independent claims, and are allowable based upon the allowability of the independent claims, and because these claims recite additional subject matter to further define the instant invention.

Claim 14

Claim 14 recites, in pertinent part:

... wherein the swirler space comprises a tapering area in which the bores are located.

Initially, Applicant submits the Examiner did not address the each of the features of claim 14. That is, the Examiner never addresses the feature that the swirler space comprises the recited tapering area. Thus, as discussed further below, Applicant submits the Examiner has issued an incomplete office action and an unclear record.

Additionally, Applicant submits GRADON does not disclose the features of claim 14. In addressing claim 13, from which claim 14 depends, the Examiner designates the slots 47 of GRADON as the recited swirler space. Moreover, in addressing claim 14, the Examiner states GRADON teaches “a tapering area where the bores are located (see Fig 2 – the passage where

the bores are located has a tapering passage width – passage of 60 is smaller than at 62).” Thus, Applicant understands the Examiner to have designated passage 60 as the recited tapering area.

Applicant submits, however, the Examiner-designated tapering area (i.e., passage 60) is not part of the Examiner-designated swirler space (i.e., slots 47). Thus, Applicant submits GRADON does not disclose the swirler space comprises a tapering area in which the bores are located, as recited in claim 14.

Claims 19 and 25

Applicant submits that GRADON does not disclose the features of claims 19 and 25. Moreover, Applicant submits that the Examiner again did not address each of the features of claims 19 and 25, such that neither a complete action nor a clear record have been presented, as discussed further below.

Claims 19 and 25 recite, in pertinent part:

. . . further comprising component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores.

In addressing claims 19 and 25, the Examiner states, GRADON “teaches component feed bores (bores 41) such that the component feed bores communicate with the bores.” As such, Applicant submits the Examiner did not address the features of claims 19 and 25. For example, the Examiner never addresses the recited “wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores.”

The Examiner is respectfully reminded of the guidance provided by MPEP § 707.07(f), which states:

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In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application.

Additionally, the Examiner is respectfully reminded of the guidance provided by MPEP § 2143.03, which states:

All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Thus, for at least these reasons, Applicant respectfully submits that the Examiner has not presented a complete action and a clear record.

Additionally, Applicant submits that GRADON does not disclose component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores. As noted above, the Examiner designates bores 41 of GRADON as the recited component feed bores. However, as shown in Figure 2 (reproduced above), the Examiner-designated feed component bores (i.e., bores 41) are upstream to the Examiner-designated bores (i.e., bores 64). As such, Applicant respectfully submits that GRADON cannot disclose component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores. That is, that liquid jets exiting from the bores 64 is a portion of the same liquid exiting from the upstream Examiner-designated component feed bores 41, such that the recited mixing cannot occur.

Thus, Applicant submits GRADON does not disclose the features of claims 19 and 25, and does not anticipate the present invention. Accordingly for at least these reasons, Applicant requests the rejection of claims 19 and 25 be withdrawn.

Claims 33 and 34

Applicant submits that GRADON does not disclose the features of claims 33 and 34. Moreover, Applicant submits that the Examiner did not address each of the features of claims 33 and 34, such that neither a complete action nor a clear record have been presented, as discussed further below.

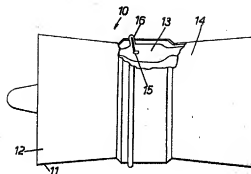
Claims 33 and 34 recite, in pertinent part:

The injection element . . . in combination with a combustion chamber, wherein the third outlet openings are structured and arranged for forming the cooling liquid film layer on a wall of the combustion chamber.

In addressing claims 33 and 34, the Examiner states:

. . . (surface 55 can be considered a "wall of the combustion chamber" since it is inside the combustor; a film of fuel is injected onto the surface - col 3 line 50; when the openings 24 are defined as the third outlet openings, fuel flowing through passages 27 can be considered a "film").

Applicant notes GRADON explicitly designates element 13, as shown in Figure 1 (reproduced below) as the combustion chamber of GRADON. Figure 1 also illustrates the burner 15 (which is the illustration of Figure 2, reproduced above) and its relative arrangement to the combustion chamber 13 of GRADON.

FIG. 1

In view of the above, Applicant respectfully submits the Examiner is not free to designate either surface 55 or passages 27, which are elements of the burner 15, as a wall of the combustion chamber. That is, such a designation is completely in conflict with the explicit teachings of GRADON, which designates element 13 as the combustion chamber.

Thus, Applicant submits GRADON does not disclose the features of claims 33 and 34, and does not anticipate the present invention. Accordingly for at least these reasons, Applicant requests the rejection of claims 33 and 34 be withdrawn.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 12 – 16, 19, 21, 22, 25, 27, 33 and 34 and indicate claims 12 – 16, 19, 21, 22, 25, 27, 33 and 34 are allowable.

2. Over STURGESS

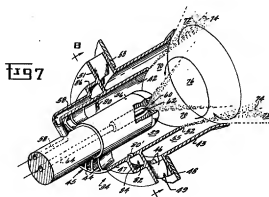
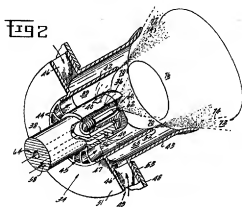
Applicant traverses the rejection of claims 22 – 25 and 27 – 32 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,703,259 to Sturgess et al. [hereinafter STURGESS]. The rejection is respectfully traversed.

Independent Claim 22

Initially, Applicant notes that in addressing the features of claim 22, the Examiner impermissibly refers to features of two different embodiments of STURGESS that are not disclosed as being usable together. That is, in addressing the features of claim 22, the Examiner refers to both the STURGESS embodiment of Figure 2 and the embodiment of Figure 7, which are alternative designs. Applicant will address the rejection assuming the Examiner only intended to refer to the embodiment of Figure 2.

Additionally, Applicant submits that STURGESS does not disclose each of the features of claim 22. For example, Applicant respectfully submits STURGESS does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claim 22.

STURGESS discloses an air blast fuel atomizer. As noted above, in addressing previously presented claim 22, the Examiner refers to Figures 2 and 7 of STURGESS, which Applicant has reproduced below.



Specifically, the Examiner designated the centerbody 36 as the recited inner element with the first outlet opening and designated the primary shroud member 42 as the recited outer element having the at least one second outlet opening. Additionally, the Examiner designated fuel injection ports 40 (shown in Figure 2) as the recited third outlet openings.

With these Examiner-designations in mind, Applicant respectfully submits STURGESS does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claim 22.

As shown in the Figure 2 of STURGESS, the Examiner-designated first outlet opening (i.e., hole at tip of centerbody 36), the Examiner-designated at least one second outlet opening (i.e., opening defined by shroud 42) and the Examiner-designated third outlet openings (i.e., fuel injection ports 40) are each located on different surfaces. That is, the Examiner-designated first outlet opening (i.e., hole (unlabeled) at tip of centerbody 36) is located at the tip of the centerbody 36. The Examiner-designated second outlet opening (i.e., opening defined by shroud 42) is located at the edge of the shroud 42 and axially beyond the Examiner-designated first outlet opening (i.e., hole at tip of centerbody 36). Additionally, the Examiner-designated third outlet openings (i.e., fuel injection ports 40) are located internally within the STURGESS device on a circumferentially-directed surface. As such, all three of the Examiner-designated outlet openings are located on different surfaces. Moreover, Applicant submits that at most, only one of these different surfaces of STURGESS in which the Examiner-designated outlet openings are arranged can reasonably be designated as a front face surface.

Therefore, Applicant respectfully submits STURGESS does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claim 22.

Independent Claim 28

Independent claim 28 recites, in pertinent part:

... guiding fuel into the combustion chamber through a first outlet opening;
guiding fuel into the combustion chamber through a second outlet opening arranged coaxially with the first outlet opening; and
forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening.

Applicant submits that STURGESS does not disclose each of the features of the present invention. For example, Applicant submits that STURGESS does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening, as recited in claim 28. Additionally, Applicant submits the Examiner has not presented a complete action, as the Examiner maintained a rejection without addressing Applicant's arguments.

Applicant's Arguments Not Addressed

Applicant submits the Examiner has not presented a complete action, as the Examiner maintained a rejection without addressing Applicant's arguments. Applicant respectfully reminds the Examiner of the guidance provided by MPEP § 707.07(f), which states:

In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of the application.

Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it.

Applicant notes that, while the Examiner repeated the rejection of claim 28, in the Examiner's Response to Arguments, the Examiner did not answer the substance of each of Applicant's arguments with regard to claim 28. For example, Applicant submits the Examiner never addressed Applicant's argument that STURGESS does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening.

Thus, Applicant submits that the Examiner has not provided a complete response. Accordingly, Applicant submits that the next Office Action cannot be made final and must provide a complete response addressing arguments presented with respect to the above-identified claim.

No Disclosure of Forming A Cooling Liquid Film Layer In The Combustion Chamber Through Bores

Additionally, Applicant submits STURGESS does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening. In addressing this feature of claim 28, the Examiner cites column 7, lines 1 – 4 of STURGESS. Applicant has reproduced column 6, line 56 – column 7, line 4, which states (emphasis added):

In operation, liquid fuel is delivered to annular fuel manifold 80 through fuel conduit 58. Pressurized fuel flows from the fuel manifold 80 through fuel injection port 80 which is preferably formed so as to discharge fuel in a direction substantially tangential to the interior surface of the primary shroud member. The fuel injection port is also preferably slanted axially aft so as to impart a downstream velocity component to the fuel as it is ejected. The fuel flows from the port with initial tangential and axial velocity components which act to centrifuge the fuel so as to form a concentration of fuel on the interior surface of the primary shroud member 42. The concentrated fuel approaches a discrete swirling film travelling

downstream along the interior surface of the primary shroud toward the circumferential lip 52.

Applicant submits that the above passage (and STURGESS in its entirety) is silent with regard to the recited "forming a cooling liquid film layer in the combustion chamber." That is, Applicant respectfully submits that STURGESS does not disclose a method comprising forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening. Instead, STURGESS explicitly discloses that pressurized air is used for cooling of the hollowbody 12. For example, STURGESS discloses at column 3, lines 40 – 46 that (emphasis added):

As will be understood, the passages 22 and 24 are adapted to deliver a flow of pressurized air from a suitable source, such as a compressor 28, into the combustor chamber 14 through suitable apertures or louvers 30 for cooling of the hollow body 12 and dilution of the gaseous products of combustion as is well known in the art.

In view of the above, Applicant respectfully submits that STURGESS does not disclose forming a cooling liquid film layer in the combustion chamber through bores, as recited in claim 28. Accordingly, for at least these reasons, Applicant respectfully submits that STURGESS does not disclose each of the features of claim 28, and does not anticipate the present invention.

Dependent Claims 23 – 25, 27 and 29 – 32

Applicant respectfully submits that claims 23 – 25, 27 and 29 – 32 depend from respective allowable independent claims, and are allowable based upon the allowability of the independent claims, and because these claims recite additional subject matter to further define the instant invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 22 – 25 and 27 – 32 and indicate claims 22 – 25 and 27 – 32 are allowable.

3. Over HOKE

Applicant traverses the rejection of claims 12, 22, 25 and 27 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,101,814 to Hoke et al. [hereinafter HOKE]. The rejection is respectfully traversed.

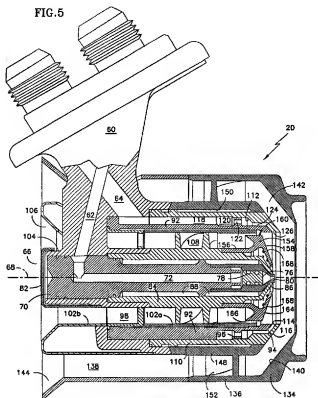
Independent Claims 12 and 22

Applicant submits that HOKE does not disclose each of the features of the present invention. For example, Applicant submits that HOKE does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claims 12 and 22.

HOKE discloses a low emissions can combustor with a dilution hole arrangement for a turbine engine. In addressing claim 12, the Examiner designates barrel 70 as the recited inner element with a first outlet opening. Additionally, the Examiner designates “everything radially outward of the inner element 70” as the recited outer element. Thus, the Examiner designates outlet 142 as the second outlet opening and secondary fuel orifices 122 as the recited third outlet openings and contends that both the second outlet openings and the third outlet openings are part of the recited outer element.

Additionally, in addressing claim 22, the Examiner again designates the secondary fuel orifices 122 as the recited third outlet openings and asserts that intermediate sleeve 92 (in which

the Examiner-designated third outlet openings are located) can be considered part of the Examiner-designated inner element (i.e., barrel 70). Applicant respectfully disagrees.



As shown, for example in Figure 5 of HOKE (reproduced above), the Examiner-designated first outlet opening (i.e., hole at end of barrel 70), the Examiner-designated at least one second outlet opening (i.e., outlet 142) and the Examiner-designated third outlet openings (i.e., ends of secondary fuel orifices 122) are each located on different surfaces. That is, the Examiner-designated first outlet opening (i.e., hole at end of barrel 70) is located on a right-most surface of the barrel 70. The Examiner-designated second outlet opening (i.e., outlet 142) is located at an end of the outer housing 134. Additionally, the Examiner-designated third outlet openings (i.e., ends of drillings 64) are located internally within the HOKE device within the intermediate element 92. As such, all three of the Examiner-designated outlet openings are

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located on different surfaces. Moreover, Applicant submits that at most, only one of these different surfaces of HOKE in which the Examiner-designated outlet openings are arranged can reasonably be designated as a front face surface.

As noted above, in addressing claim 22, the Examiner again designates secondary fuel orifices 122 as the third outlet openings. However, the Examiner now contends that the secondary fuel orifices 122 are located on the recited inner element. As discussed above with regard to claim 12, however, as shown in the above Figure, all three of the Examiner-designated outlet openings are located on different surfaces. Moreover, Applicant submits that at most, only one of these different surfaces of HOKE in which the Examiner-designated outlet openings are arranged can reasonably be designated as a front face surface.

Therefore, Applicant respectfully submits HOKE does not disclose at least two of the first outlet opening, the at least one second outlet opening and the third outlet openings are arranged on the front face surface, as recited in claims 12 and 22. Accordingly, for at least these reasons, Applicant respectfully submits that HOKE does not disclose each of the features of claims 12 and 22, and does not anticipate the present invention.

Dependent Claims 25 and 27

Applicant respectfully submits that claims 25 and 27 depend from an allowable independent claim, and are allowable based upon the allowability of the independent claim, and because these claims recite additional subject matter to further define the instant invention.

Claim 25

Additionally, Applicant submits HOKE does not disclose the features of claim 25, and that the Examiner did not address each of the features of claim 25. In addressing claim 25, the Examiner designates orifices 168 as the recited component feed bores, and asserts that the orifices 168 "inject a fluid that mix with the fluid from the bores; they mix downstream of the injector)."

Initially, Applicant notes that the Examiner has not addressed the features of claim 25. That is, claim 25 recites, in pertinent part:

. . . further comprising component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores.

However, in addressing claim 25, the Examiner at least never addresses "liquid jets," or "wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores." As such, Applicant submits the Examiner has not addressed each of the features of claim 25.

The Examiner is respectfully reminded of the guidance provided by MPEP § 707.07(f), which states:

In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application.

Additionally, the Examiner is respectfully reminded of the guidance provided by MPEP § 2143.03, which states:

All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Thus, for at least these reasons, Applicant respectfully submits that the Examiner has not presented a complete action and a clear record.

Moreover, Applicant notes that the Examiner-designated component feed bores (i.e., orifices 168) are specifically identified as air passages for feeding a high velocity stream of air. Applicant respectfully notes that, while air may be a fluid, air cannot reasonably be construed as a liquid, as recited in claim 25.

As such, Applicant submits HOKE does not disclose each of the features of claim 25, and does not anticipate the present invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 12, 22, 25 and 27 and indicate claims 12, 22, 25 and 27 are allowable.

4. Over STURGESS '413

Applicant traverses the rejection of claims 28 – 31 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,866,413 to Sturgess [hereinafter STURGESS '413]. The rejection is respectfully traversed.

Independent Claim 28

Applicant submits that STURGESS '413 does not disclose each of the features of the present invention. For example, Applicant submits that STURGESS '413 does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to

coaxially surround the first outlet opening. Additionally, Applicant submits the Examiner has not addressed each of the features of claim 28.

All Claim Features Not Addressed

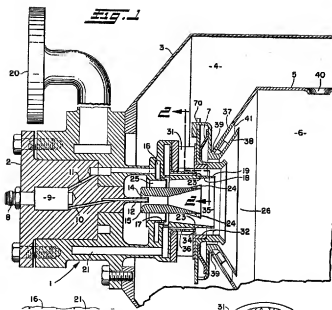
Independent claim 28 recites, in pertinent part:

... forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening.

In addressing claim 28, the Examiner states “[t]he bores [17] inject fuel onto a prefilming surface 18 (i.e. the[y] create a film layer).” However, Applicant submits the Examiner has not addressed each of the features of claim 28. That is, the Examiner never addressed forming a cooling liquid film layer in the combustion chamber. As such, Applicant submits the Examiner has issued an incomplete office action and an unclear record, as discussed further below.

No Disclosure of Forming a Cooling Liquid Film Layer in Combustion Chamber

Additionally, Applicant submits STURGESS ‘413 does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening. In addressing claim 28, the Examiner designates the prefilming surface 18 as the recited combustion chamber. However, Applicant notes STURGESS ‘413 specifically designates element 6 as the combustion chamber of the STURGESS ‘413 device. Applicant has reproduced Figure 1 of STURGESS ‘413, which illustrates the Examiner-designated combustion chamber (i.e., prefilming surface 18) and actual combustion chamber 6.



As shown in Figure 1, the Examiner-designated combustion chamber (i.e., prefilming surface 18) is located upstream of the actual combustion chamber 6. Moreover, Applicant submits the Examiner is not free to designate prefilming surface 18 as a combustion chamber when STURGESS '413 explicitly designates another element as the combustion chamber. As such, Applicant submits the prefilming surface 18 cannot reasonably constitute the recited combustion chamber.

Thus, for at least these reasons, Applicant submits STURGESS '413 does not disclose the features of claim 28, and does not anticipate the present invention.

Dependent Claims 29 - 31

Applicant respectfully submits that claims 29 - 31 depend from an allowable independent claim, and are allowable based upon the allowability of the independent claim, and because these claims recite additional subject matter to further define the instant invention.

Claim 29

Claim 29 recites, in pertinent part:

... wherein the cooling liquid film layer is directed at least in part towards a combustion space inner wall.

In addressing claim 29, the Examiner states “[t]he surface 18 is considered a combustion space inner wall.” For the reasons discussed above with regard to claim 28, Applicant respectfully submits that the Examiner’s assertion that the surface 18 is considered a combustion space inner wall is unsupportable. That is, Applicant submits STURGESS ‘413 specifically designates element 6 as the combustion chamber of the STURGESS ‘413 device. Thus, Applicant submits the Examiner is not free to designate prefilming surface 18 as a combustion chamber surface when STURGESS ‘413 explicitly designates another element as the combustion chamber.

Thus, for at least these reasons, Applicant submits STURGESS ‘413 does not disclose the features of claim 29, and does not anticipate the present invention.

Claim 30

Additionally, while indicating claim 30 was rejected as anticipated by STURGESS ‘413, the Examiner failed to address any of the features of claim 30. As such, Applicant submits the Examiner has issued an incomplete office action and an unclear record, as discussed further below.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 28 – 31 and indicate claims 28 – 31 are allowable.

Traversal of Rejection Under 35 U.S.C. § 103(a)

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness. See MPEP §2142. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.¹ Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Applicants submit that the combination of references do not teach or suggest each of the features of the present invention.

1. *Over GRADON in view of STURGESS*

Applicant traverses the rejection of claims 17, 18, 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over GRADON in view of STURGESS. The rejection is respectfully traversed.

As neither applied document discloses or suggests the above-noted subject matter recited in at least Applicant's independent claims 12 and 22, as discussed above, Applicant submits that

¹ While the *KSR* court rejected a rigid application of the teaching, suggestion, or motivation ("TSM") test in an obviousness inquiry, the [Supreme] Court acknowledged the importance of identifying "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does" in an obviousness determination. *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1356-1357 (Fed. Cir. 2007) (quoting *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731 (2007)).

no proper combination of GRADON in view of STURGESS can even arguably render unpatentable the embodiments of the invention recited in the pending claims. Therefore, Applicant submits that pending rejection is improper and should be reconsidered and withdrawn.

Additionally, Applicant submits claims 17, 18, 23 and 24 depend from respective allowable independent claims, and are allowable based upon the allowability of the independent claims, and because these claims recite additional subject matter to further define the instant invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 17, 18, 23 and 24 and indicate claims 17, 18, 23 and 24 are allowable.

2. Over GRADON in view of SHEKLETON

Applicant traverses the rejection of claims 20 and 26 under 35 U.S.C. § 103(a) as being unpatentable over GRADON in view of U.S. Patent No. 5,113,647 issued to Shekelton [hereinafter "SHEKLETON"]. The rejection is respectfully traversed.

Applicant respectfully submits that claims 20 and 26 depend from respective allowable independent claims, and are allowable based upon the allowability of the respective independent claims, and because these claims recite additional subject matter to further define the instant invention. Moreover, Applicant submits SHEKLETON does not cure the deficiencies note above with regard to GRADON. Applicant notes the Examiner only cited SHEKLETON for its purported teachings of the features of claims 20 and 26.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 20 and 26 and indicate claims 20 and 26 are allowable.

3. Over HOKE in view of STURGESS

Applicant traverses the rejection of claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over HOKE in view of STURGESS. The rejection is respectfully traversed.

As neither applied document discloses or suggests the above-noted subject matter recited in at least Applicant's independent claim 22, as discussed above, Applicant submits that no proper combination of HOKE in view of STURGESS can even arguably render unpatentable the embodiments of the invention recited in the pending claims. Therefore, Applicant submits that pending rejection is improper and should be reconsidered and withdrawn.

Additionally, Applicant submits claims 23 and 24 depend from an allowable independent claim, and are allowable based upon the allowability of the independent claim, and because these claims recite additional subject matter to further define the instant invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 23 and 24 and indicate claims 23 and 24 are allowable.

4. Over HOKE in view of SHEKLETON

Applicant traverses the rejection of claims 20 and 26 under 35 U.S.C. § 103(a) as being unpatentable over HOKE in view of SHEKLETON. The rejection is respectfully traversed.

Applicant respectfully submits that claims 20 and 26 depend from respective allowable independent claims, and are allowable based upon the allowability of the respective independent claims, and because these claims recite additional subject matter to further define the instant invention. Moreover, Applicant submits SHEKLETON does not cure the deficiencies noted

above with regard to HOKE. Applicant notes the Examiner only cited SHEKLETON for its purported teachings of the features of claims 20 and 26.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 20 and 26 and indicate claims 20 and 26 are allowable.

5. Over STURGESS in view of SHEKLETON

Applicant traverses the rejection of claims 20 and 26 under 35 U.S.C. § 103(a) as being unpatentable over STURGESS in view of SHEKLETON. The rejection is respectfully traversed.

Applicant respectfully submits that claims 20 and 26 depend from respective allowable independent claims, and are allowable based upon the allowability of the respective independent claims, and because these claims recite additional subject matter to further define the instant invention. Moreover, Applicant submits SHEKLETON does not cure the deficiencies noted above with regard to STURGESS. Applicant notes the Examiner only cited SHEKLETON for its purported teachings of the features of claims 20 and 26.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 20 and 26 and indicate claims 20 and 26 are allowable.

New Claims

By the present amendment, Applicant has presented new claims 35 and 36 for the Examiner's consideration. Applicant respectfully submits that claims 35 and 36 depend from respective allowable independent claims, and are allowable based upon the allowability of the independent claims as explained above, and because these claims recite additional subject matter to further define the instant invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner indicate claims 35 and 36 as allowable.

Complete Action Not Provided

Applicant respectfully submits that the Examiner did not address each of the features of claims 14, 19, 25, 28, 33 and 34 and did not address any of the features of claim 30, as noted above. Additionally, Applicant submits the Examiner maintained a rejection of claim 28 without addressing each of Applicant's proffered arguments. Thus, Applicant respectfully submits that the Examiner has not set forth a complete action or a clear record.

For at least these reasons, Applicant submits that a clear issue was not developed between the Examiner and Applicant. More specifically, MPEP §706 states:

Before final rejection is in order a clear issue should be developed between the examiner and applicant. To bring the prosecution to as speedy conclusion as possible and at the same time to deal justly by both the applicant and the public, the invention as disclosed and claimed should be thoroughly searched in the first action and the references fully applied; and in reply to this action the applicant should amend with a view to avoiding all the grounds of rejection and objection.

Additionally, MPEP 706.07(a) notes:

Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p). ...

Furthermore, a second or any subsequent action on the merits in any application ... will not be made final if it includes a rejection, on newly cited art, other than information submitted in an information disclosure statement filed under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17 (p), of any claim not amended

by applicant or patent owner in spite of the fact that other claims may have been amended to require newly cited art.

Accordingly, Applicant respectfully requests that the Examiner properly address the untreated features of the claimed invention and Applicant's arguments, such that a clear issue is developed between the Examiner and Applicant. Moreover, Applicant submits that the finality of the instant action should be withdrawn and the next action, which should clarify the record, should not be a final action.

Authorization to Charge Deposit Account

The undersigned authorizes the charging of any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, to Deposit Account No. 19 - 0089 in order to maintain pendency of this application.

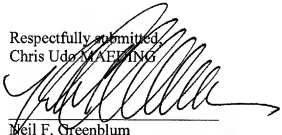
CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicant's invention, as recited in claims 12 - 36. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
Chris Uda MAEETING



Neil F. Greenblum
Reg. No. 28,394

Robert W. Mueller
Reg. No. 35,043

GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191